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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,845	09/28/2001	Masayuki Nishimura	50395-115	2361

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EXAMINER

SONG, SARAH U

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,845

Applicant(s)

NISHIMURA, MASAYUKI

Examiner

Sarah Song

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-- Th MAILING DATE of this communication appears on the cov r sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: Brian Healy

DETAILED ACTION

1. Applicant's communication filed on May 19, 2003 has been carefully studied by the Examiner. The arguments advanced therein, considered together with the amendments made to the claims, are persuasive and the rejections based upon prior art made of record in the previous Office Action are withdrawn. Claims 1, 7 and 10-13 have been amended. Claims 1-13 are pending.

Claim Objections

2. Claims 11 and 13 are objected to because of the following informalities: Examiner suggests deletion of "said" in line 4 of the claims. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 10-13 essentially claim jointing the first and second cables together, each cable comprising a first fiber having a positive chromatic dispersion fusion-spliced to a second fiber having negative chromatic dispersion, such that the positive chromatic dispersion fiber of the first cable is spliced to the positive chromatic dispersion fiber of the second cable and such that the negative chromatic dispersion fiber of the first cable is spliced to the negative chromatic dispersion fiber of the second cable. The claims thus recite two cables, each comprising a hybrid fiber, wherein the two cables are joined such that the positive dispersion end of the hybrid fiber of the first cable is joined to the positive dispersion end of the hybrid fiber of the second cable,

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and such that the negative dispersion end of the same hybrid fiber of the first cable is joined to the negative dispersion end of the same hybrid fiber of the second cable, which results in a circular configuration. Therefore, claims 10-13 do not particularly point out and distinctly claim the subject matter of the invention as shown in the Figures.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. **Claims 1-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (320-Gb/s WDM Transmission with 50-GHz Channel Spacing Over 564 km of Short-Period Dispersion-Managed Fiber (Perfect Cable) newly cited).** Chung et al. discloses an optical cable comprising first and second fiber of opposite dispersion values. The fibers each have an absolute chromatic dispersion of 17 ps/km/nm and a length of 4.5 km. The signal wavelength is 1550nm (Figure 2). The distance between the joint and an adjacent end is 4.5 km. The fibers are spliced with a splicing loss less than about 0.1 dB.

7. Chung et al. does not specifically disclose fusion splicing. It would have been obvious to one having ordinary skill in the art to specifically fusion splice the fibers, since it was known in the art that fusion splices exhibit low splice losses.

8. Regarding claim 4, Chung et al. does not disclose a ratio of the effective areas of the respective fibers. However, it is well known in the art that single mode fibers having positive chromatic dispersion and dispersion compensating fibers having negative chromatic dispersion have significantly disparate effective areas. Therefore, selection of fibers such that the ratio of

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effective areas being greater than 2 or less than 0.5 would have been within the level of ordinary skill in the art.

9. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

10. **Claims 1-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukitani et al. (previously relied upon) in view of Wildeman (U.S. Patent 5,778,128).**

Tsukitani et al. discloses a hybrid transmission line comprising a first optical fiber (PSCF) having a positive chromatic dispersion at a signal light wavelength; and a second optical fiber (DCF) having a negative chromatic dispersion at the same wavelength; wherein said first and second optical fibers have been connected by fusion splicing at a joint. The signal light wavelength is 1.55 μm , the magnitudes of the chromatic dispersions of the first and second fibers is not less than 10 ps/nm/km, and the splice joint is subjected to heat treatment resulting in a splice loss not more than 0.3 dB. See Table 1 and the subsequent paragraph on page 65 of Tsukitani et al. Tsukitani et al. also discloses a ratio of effective areas not less than 2. Tsukitani et al. does not specifically disclose an optical cable.

11. Wildeman et al. discloses an optical cable comprising a hybrid transmission line similar to that of Tsukitani et al. The optical cable comprising a first optical fiber and a second optical fiber having opposite dispersions. One of ordinary skill in the art would have found it obvious to modify the hybrid transmission line of Tsukitani et al. into a cabled form as taught by Wildeman for protectively encasing the transmission line. In light of such a modification, the fusion splice joint of Tsukitani et al. would have been consequently accommodated in the optical cable.

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12. Regarding claim 3, neither Tsukitani et al. nor Wildeman disclose a cable length of not less than 1 km but not more than 10 km. However, as indicated by the applicants on page 2 of the specification, the length of optical cable that can be installed on land is generally not exceeding about 10 km. Therefore, a cable length of not less than 1 km but not more than 10 km would have been obvious to one of ordinary skill in the art for facilitating installation of the cable on land.

13. Regarding claim 5, a distance between the joint and an adjacent end of the optical cable is not disclosed. However, it would have been within the level of ordinary skill in the art to locate the splice sufficiently from an adjacent end to avoid loss of the dispersion managed characteristics of the hybrid line, i.e. to maintain a sufficient length of each respective portion of the hybrid line to ensure the dispersion managed characteristics of the line.

14. **Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukitani et al. in view of Wildeman as applied to claim 2 above, and further in view of Ray et al. (previously relied upon).** Neither Tsukitani et al. nor Wildeman disclose re-coating the joint subsequent to fusion splicing. Ray et al. discloses that conventional fusion splices are protected by sleeves, which are secured around the splices (column 12, lines 38-44). A protective sleeve around a splice joint is equivalent to a re-coated splice joint. Therefore, one of ordinary skill in the art would have found it obvious to re-coat the fusion splice of Tsukitani et al. to protect the splice joint.

15. **Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukitani et al. in view of Wildeman as applied to claim 2 above, and further in view of Fangmann et al. (U.S. Patent 5,611,016).** Neither Tsukitani et al. nor Wildeman disclose information for

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identifying each type of optical fiber. Fangmann et al. disclose light-colored indicators for positive dispersion fibers and dark-colored indicators for negative dispersion fibers (column 6, lines 54-61). One of ordinary skill in the art would have found it obvious to provide the hybrid line of Tsukitani et al. with colored markers to facilitate the identification of the respective fibers in the field, as taught by Fangmann et al.

Allowable Subject Matter

16. Claims 10-13 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

17. The prior art does not disclose an optical cable according to Figure 3 of the drawings.

Response to Arguments

18. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rosenberg discloses an optical cable comprising a spliced hybrid fiber.

20. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 703-306-5799. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 703-308-0956 or to the technical support staff supervisor at telephone number 703-308-3072.


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July 24, 2003


Brian Healy
Primary Examiner